

Name: Ester

Class: 7b Michael Ng

Title of experiment: Efficiency and Effectiveness of Antacids

Aim : Investigate efficiency and effectiveness of various antacids.



Hypothesis: My hypothesis is that PH will become more acidic than basic, because we more hydroxide ions than hydrogen ion. Therefore the hydroxide ions and the hydrogen ion will cancel each-other out but there is more hydroxide ion so it will be slightly acidic. I also believe that one antacid might be more effective and the other might be more efficient, because one antacid might make the pH rise quickly while the other antacid can have a higher final pH but had been rising slowly.

Independent variable:

We are changing the different types of antacids, to see what the difference in PH is. Which one is more effective and which one is more efficient.

Dependent variable: We will be measuring the PH of the antacids. We will be using a pH scale to measure the pH every minute and see how it is changing and how fast, efficient and effective it is changing .

Materials/Apparatus:

- 5 beakers (2 for antacid and 2 for acid and 1 for base)
- Antacid solution
- Acid solution
- PH probe
- Base solution
- Dropper
- Water



Controlled variable:

- 1) To make sure that the experiment is fair, we have to make sure that the PH is always clean and doesn't have any acid, base or antacid on it when we put it into another solution, to make sure that it won't effect the result.
- 2) We also have to make sure to clean the dropper when using it for another solution because just on drop could change the experiment. (similar to controlled variable 1)
- 3) To make sure that the experiment is fair we will also put just as much antacid in one beaker as in another beaker.
- 4) When we measure how many grams of antacid and water that is in the beakers we need to make sure that the beakers are the same and weight the same. Otherwise the weight of each beaker will give a different result when we are measuring.

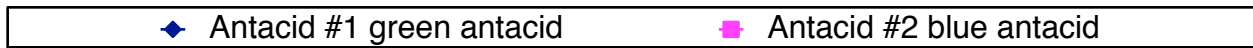
**Method:**

- 1) We got 2 beakers with 0.6 grams of antacid.
- 2) We will add 1.7 ml of water into both of the beakers (so that we will be able to find the PH of the solution).
- 3) We will then titrate the acid to as close to 2 as possible, because that is the PH of stomach acid and Michael said to use a acid solution as close to stomach acid (2) as possible.
- 4) We will connect the PH into Michael's computer.
- 5) We will set up the PH in the perfect hight, and make sure that the PH will reach the solution after poring in the acid.
- 6) We will pour all the acid solution into the beaker at once and then mix it really well and then when the computer has recorded for about 6-10 minutes we will stop.
- 7) Then we will do the same to the second solution with the other kind of antacid.

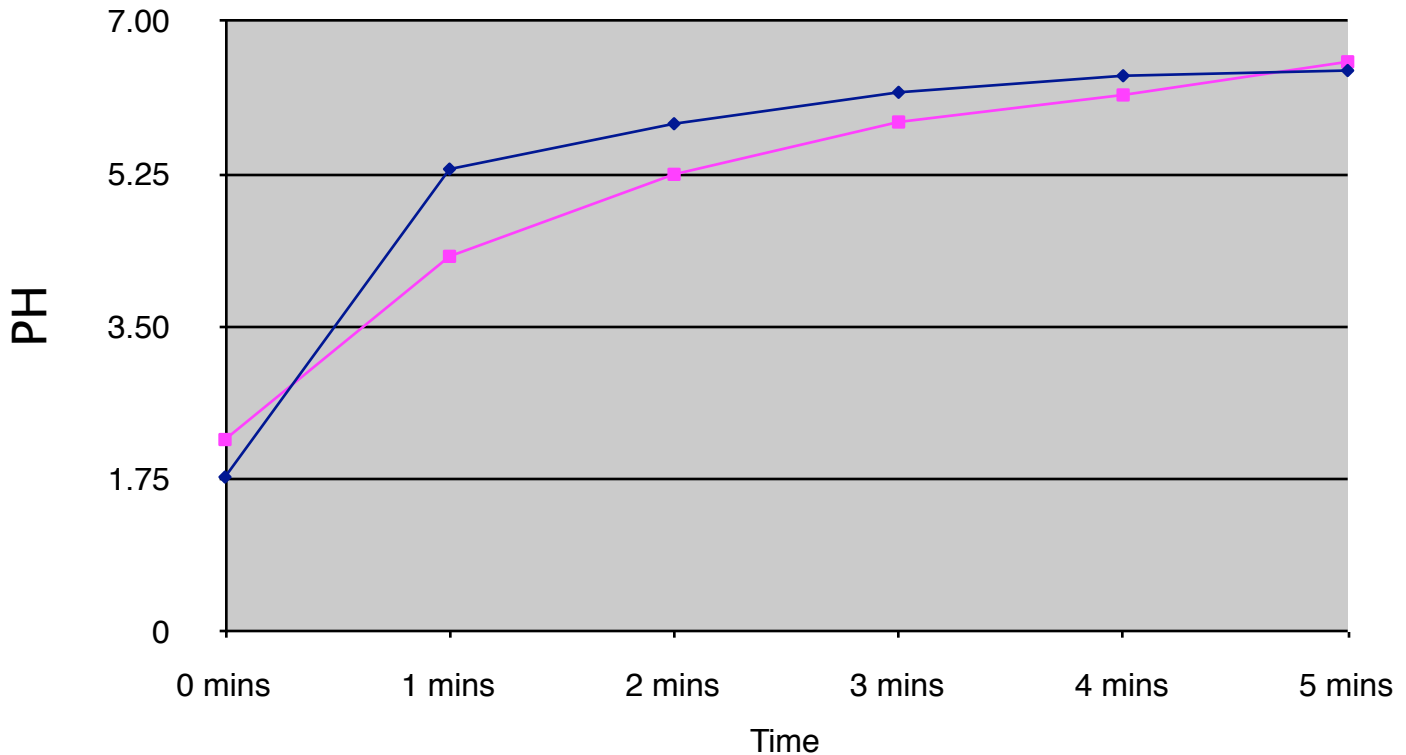
**Data collection:**

Rise in pH recorded each minute		
Time	Green antacid pH	Blue antacid pH
1 min	5.31	4.31
2 min	5.83	5.25
3 min	6.19	5.85
4 min	6.38	6.16
5 min	6.44	6.54

Data processing:



Pattern: The green antacid and the blue antacid both slowed down in rising (the PH) at about the same time, after about 3 minutes.



Analysis: During the beginning at of the experiment both the PH increased rapidly, the first minute they both doubled in pH, the green antacid increase from 1.75 to 5.31 and blue antacid increased from 2.21 to 4.31. My graph also tells me that the green antacid increase more rapidly but quickly becomes constant, by only the first minute the pH had increased form 1.75 to 5.31. But the final pH using the blue antacid was greater than the green antacid, it was about 6.54. After 5 minutes the PH had almost neutralized successfully.

### Conclusion:

My hypothesis was correct, both of the antacid solution's PH neutralized but it was still slightly acidic. I believe that the antacid and the acid cancel each other out and therefore it becomes acidic, because there was more acid than antacid.

Based on the data from the analysis the green antacid was more efficient, but the blue antacid was more effective. The green antacid was more efficient because in 1 minute it almost doubled in PH (1.75 to 5.31), while blue antacid didn't rise as much (2.21 to 4.31). But the blue antacid was more effective because the final result was greater than the green antacids. The final result for both the PH's was for the blue antacid: 6.54 and green antacid: 4.44.

### Evaluation:

For the next experiment that is similar to this experiment I would do some more research before the experiment so that we would always know what was going on and why. I think we could have improved the experiment by preparing with all the materials before starting. For example, we should bring our own newspaper because after about 5 minutes of just working on titrating our acid we spilled a drop and we remembered that we had to bring news paper, so we should be more organized. To improve the measurements we should record every 30 seconds and not every 60 seconds so that we can see a greater graph. Overall, I think we can improve on our organization and how much time we spend before taking another measurement in the PH. But after the experiment I am still proud of my contribution to this experiment and proud of the result.